

CLAIM AMENDMENTS

Claims 1 through 28 (canceled).

1 29. (new) A nucleotide sequence according to SEQ ID NO:
2 1, isolated from and replicatable in a microorganism of the family
3 Corynebacteria, and which encodes L-serine dehydratase, but having
4 nucleotides from position 506 to position 918 completely or
5 partially deleted, or mutated so that said nucleotide sequence,
6 when incorporated into a microorganism of the family
7 Corynebacteria, in a culture medium containing the microorganism
8 of the family Corynebacteria, expresses L-serine dehydratase to a
9 lesser extent than the naturally occurring nucleotide sequence
10 according to SEQ ID NO: 1, or does not express L-serine dehydratase
11 at all, thereby preventing enzymatic degradation of the L-serine to
12 pyruvate following microbial production of L-serine from a
13 carbohydrate.

1 30. (new) The nucleotide sequence according to SEQ ID
2 NO: 1 defined in claim 29 which encodes L-serine dehydratase, but
3 having nucleotides from position 506 to position 918 completely
4 deleted, so that said polynucleotide sequence, when incorporated
5 into a microorganism of the family Corynebacteria, following
6 microbial production of L-serine from a carbohydrate in a culture
7 medium containing the microorganisms of the family Corynebacteria,

8 does not express L-serine dehydratase at all, thereby preventing
9 enzymatic degradation of the L-serine to pyruvate following
10 microbial production of L-serine from a carbohydrate.

1 31. (new) A gene structure containing at least one
2 nucleotide sequence according to claim 29, said nucleotide sequence
3 having a regulatory sequence operatively linked thereto.

1 32. (new) A gene structure containing the nucleotide
2 sequence according to claim 30, said nucleotide sequence having a
3 regulatory sequence operatively linked thereto.

1 33. (new) A vector containing at least one gene
2 structure according to claim 31.

1 34. (new) A vector containing at least one gene
2 structure according to claim 32.

1 35. (new) A recombinant microorganism belonging to the
2 family Corynebacteria, whose genome includes a series of endogenous
3 SerA-fbr, SerB and SerC Corynebacteria serine biosynthesis genes,
4 which express enzymes that catalyze the synthesis of L-serine from
5 a carbohydrate in a culture medium containing the microorganism of
6 the family Corynebacteria, and which further includes an endogenous
7 nucleotide sequence according to SEQ ID NO: 1 which encodes L-

8 serine dehydratase, but having nucleotides from position 506 to
9 position 918 completely or partially deleted, or mutated so that
10 said nucleotide sequence, homologously recombined into the genome
11 of the microorganism of the family Corynebacteria, between
12 nucleotide sequences SEQ ID NO: 3 and SEQ ID NO: 6 respectively
13 flanking the 5' and 3' ends of said endogenous nucleotide sequence
14 in a culture medium containing said recombinant microorganism of
15 the family Corynebacteria, expresses L-serine dehydratase to a
16 lesser extent than the naturally occurring L-serine dehydratase
17 expressed according to SEQ ID NO: 1, or does not express L-serine
18 dehydratase at all, thereby preventing enzymatic degradation of the
19 L-serine to pyruvate following the microbial production of L-serine
20 from a carbohydrate.

1 36. (new) The recombinant microorganism defined in claim
2 35 belonging to the family Corynebacteria, and which includes a
3 series of endogenous SerA-fbr, SerB and SerC Corynebacteria serine
4 biosynthesis genes, which express enzymes that catalyze the
5 synthesis of L-serine from a carbohydrate in a culture medium
6 containing the microorganism of the family Corynebacteria, and
7 which further includes an endogenous nucleotide sequence according
8 to SEQ ID NO: 1 which encodes L-serine dehydratase, but having
9 nucleotides from position 506 to position 918 completely or
10 partially deleted, or mutated so that said nucleotide sequence,
11 when homologously recombined into the genome of the microorganism

12 of the Corynebacterium replacing the wild type endogenous
13 nucleotide sequence according to SEQ ID NO:1, incorporated into a
14 microorganism of the family Corynebacteria, in a culture medium
15 containing the microorganism of the family Corynebacteria, does
16 not express L-serine dehydratase at all, such that said sequence no
17 longer encodes a protein having L-serine dehydratase activity,
18 thereby preventing enzymatic degradation of the L-serine to
19 pyruvate following the microbial production of L-serine from a
20 carbohydrate.

1 37. (new) The recombinant microorganism defined in claim
2 36 belonging to the family Corynebacteria, wherein the
3 microorganism is Corynebacterium Glutamicum of the strain
4 13032ΔpanBCΔsdaApSerA^{fbr}CB.

1 38. (new) A recombinant microorganism belonging to the
2 family Corynebacteria, whose genome includes a series of endogenous
3 SerA-fbr, SerB and SerC Corynebacteria serine biosynthesis genes,
4 which express enzymes that catalyze the synthesis of L-serine from
5 a carbohydrate in a culture medium containing the microorganism of
6 the family Corynebacteria, and which further includes SEQ ID NO: 3
7 and SEQ ID NO: 6, as homologous flanking sequences, homologously
8 recombined into the genome of the microorganism replacing an
9 endogenous nucleotide sequence according to SEQ ID NO: 1 which
10 encodes L-serine dehydratase, at locations in the genome of the

11 microorganism corresponding to the 5' and 3' ends, respectively, of
12 said replaced endogenous nucleotide sequence, in a culture medium
13 containing said recombinant microorganism of the family
14 *Corynebacteria*, which does not express L-serine dehydratase at all,
15 such that said microorganism no longer encodes a protein having L-
16 serine dehydratase activity thereby preventing enzymatic
17 degradation of the L-serine to pyruvate following the microbial
18 production of L-serine from a carbohydrate.

1 39. (new) A probe for identifying and/or isolating a
2 nucleotide sequence that is SEQ ID NO: 1, which encodes L-serine
3 dehydratase, an endogenous enzyme in microorganisms of the
4 *Corynebacteria* family, which enzymatically degrades L-serine,
5 microbially produced from a carbohydrate in a culture medium
6 containing the microorganisms of the *Corynebacteria* family, wherein
7 the probe is a nucleotide sequence selected from the group
8 consisting of:

9 TCGTGCAACTTCAGACTC (SEQ ID NO:3);
10 CCCATCCACTAAACTTAAACACGTCATAATGAACCCACC (SEQ ID NO:4);
11 TGTTTAAGTTTAGTGGATGGGCCGACTAATGGTGCTGCG (SEQ ID NO:5); and
12 CGGGAAGCCCAAGGTGGT (SEQ ID NO:6).